# Operations Report for the National Terrorism Preparedness Institute

1 June - 30 September 1998 FY98
1 October - 30 September 1999 FY99

**NTPI**

Protecting America's First Responders

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# FY 98 Executive Summary

**Overview**

During the National Terrorism Preparedness Institute's (NTPI) first four months of operation, it  trained first responders nationally by developing two courses, establishing a web presence, conducting a tele-course in conjunction with the International Association of Fire Chiefs, contracting to develop 14 courses, and conducting conventional instruction at three locations.

NTPI currently has 12 employees on staff and expects to add additional support staff as funding becomes available.

**Conventional Training**

NTPI courses are seminar based and include team problem solving modules to foster interaction.  To date, federal, state and local emergency response agencies have received instruction from NTPI.

Currently, NTPI offers two courses which have been developed, tested and validated.  These include "Decontamination for Weapons of Mass Destruction, a Manager's Overview" which was developed by the NTPI staff, and "Emergency Response to Terrorism: Basic Concepts" which was developed by the National Fire Academy to teach WMD awareness.  A total of 138 students received instruction during FY 98 in St. Petersburg, Florida and Seattle, Washington.

Courses under development include: Health Care Facility Decontamination Operations, Pre-Critical Incident Stress Debriefing (CISD) for WMD Incidents, Medical Operations for WMD Terrorism, WMD Incident Safety Officer, Decontamination for WMD, Operational Response, Operations Planning, Damage Assessment, Public Education for WMD, Evidence Detection and Sustained Operations for WMD Incidents.

On special request, Dr. George Buck and Dr. Matthew Blais delivered an eight-hour block of instruction at Arkansas Technical University in Russellville, Arkansas.

**Distance Learning**

NTPI hosted a live broadcast titled "Terrorism in America's Cities" at the International Association of Fire Chief's conference held in Louisville, KY on September 15, 1998. A live audience of 1,300 fire chiefs from around the world along with 8,688 viewers from across 47 states and the District of Columbia participated in this broadcast.  Law Enforcement Education Television Network (LETN) and Fire Education Television Network (FETN) simulcast NTPI's broadcast live and have rebroadcast rights.  The broadcast was also transmitted by streaming video over the Internet.

Panelists included: Garry Briese (Executive Director, IAFC); Ellis Stanley (City of Los Angeles Emergency Management); Mario Trevino (Chief, Las Vegas Fire Department); John Eversol (Chief, Hazardous Materials, Chicago Fire Department).  James Lee Witt (Director, Federal Emergency Management Agency) wrapped up the broadcast with a 15 minute presentation.

NTPI is attempting to keep costs down by making instructional materials available via the Internet. Standardized, easily accessible software applications make these materials available to any jurisdiction with Internet access.  Materials placed in the public domain are carefully screened to avoid providing sensitive information to unauthorized people or groups.

# FY 99 Forecast

## Overview

NTPI is conducting training at the University of Massachusetts, the Connecticut Fire Academy, and the Orange County Sheriff's Office in Orlando, Florida in the first quarter of FY99.

The eleven new courses initiated under last year's budget will continue development and be scheduled as they are completed.  The course validation process allows NTPI to screen the curriculum and develop a pool of potential adjunct instructors.

NTPI will continue to develop and explore alternative methods to distribute training.  These include but are not limited to CD-ROMs, Internet training, and distance learning broadcasts.

## Conventional Training

The current projection for the first quarter of FY99 is 34 courses reaching 1,700 students.  Our goal is to conduct 384 classes in the remaining three-quarters of FY99 reaching 11,520 students.

NTPI must continuously update its course materials to the meet new challenges. Two topics already identified for future course development are "HAZMAT-EOD Crossover for WMD Terrorism" and "The Role of the Public Information Officer in WMD Incidents".

NTPI plans to hire two additional coordinators and a curriculum design specialist.  The goal is to develop regional pools of adjunct instructors to quickly and effectively meet the needs of our customers and minimize cost.

## Distance Learning

NTPI is scheduled to conduct four satellite broadcasts and develop one instructional video for First Responders during FY '99.

The National Guard is currently fielding a teleconferencing system in armories across the United States. NTPI plans to explore this technology as a means of delivering quality training to first responders in their own communities.

NTPI plans to develop Internet training extension materials for all of our courses on a limited access basis.  Participants will be required to register on line to verify need to know, obtain a password and complete course activities prior to obtaining a certificate of completion for each course.

## Mobile Emergency Operations Center (MEOC) Trainer

The MEOC trainer is an air-transportable, fully functional emergency operations center. It has command and control capabilities that integrate information systems and telecommunications based on the Incident Command System.  Initial training on the MEOC consists of building a cadre of highly qualified first responders to develop and test its capabilities.  This testing will consist of deploying the MEOC to field locations and conducting mock disaster simulations.  Full operational capability is projected for FY00.

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# Section I Current Operations

NTPI's first four months of operations have exceeded the milestones set. A framework of expansion has been laid to assimilate new staff members, adjunct instructors and market the program. NTPI has established a web presence, conducted a tele-course in conjunction with the International Association of Fire Chief's conference, contracted to develop 14 courses, and conducted on-site courses in three locations.

NTPI has organized and setup the necessary framework to administer and develop courses. This includes organizing office space, requisitioning equipment and software to support these activities. Staffing for NTPI has risen from three in May to 12.

To ensure that course content is relevant to the needs of the first responder, we have drawn our course developers and instructors from the emergency response community itself. NTPI currently offers two courses to federal, state and local emergency response agencies. Courses are offered to an audience of at least 30 students, NTPI provides a qualified instructor and all training materials at no charge.

All NTPI courses begin with a seminar-based training phase that maximizes information transfer. The next phase relies on Internet extension training to convey general knowledge on the various topics and sustainment of critical skills. The final phase uses a hands-on approach to reinforce the skills learned in the previous two phases. All courses are designed to be presented at the location of the students and during duty hours to reduce the need for overtime and travel. The objective is to provide highly effective training to as many first responders as possible at the lowest cost.

An NTPI website has been established. This contains pertinent organizational and course offering information. As this

site grows actual online supplemental courses will be added linked to the on-site courses. This website is a major marketing tool for the Institute.

## Course Development

To date, NTPI developed, presented and validated the Decontamination for Weapons of Mass Destruction, A Manager's Overview course in St. Petersburg. The Course was first offered on the 20 August. The validation process resulted in minor revision of the course and was followed by two deliveries in Seattle, Washington on the 24 and 25 September. The class was very well received during all three presentations. The primary concern of the attendees was that enough information was imparted to cover two days. As all the students also voiced the opinion that they could not get two days to attend the course, we have transferred some of the information to the Internet for extension training. A total of 95 personnel have been trained on this program from a variety agencies including police, fire, EMS, hospital administration, EPA and the medical examiners office.
NTPI adopted the National Fire Academy's awareness level training course, Emergency Response to Terrorism: Basic Concepts as the other course offering for FY98. The course was offered at Saint Petersburg Junior College on 18 August and was attended by 43 personnel representing fire, emergency management, EMS, search and rescue, and law enforcement. The course was very well received and we are planning to offer the course around the nation.

NTPI is also preparing 12 additional courses for delivery in the first quarter of FY99. Many of these drafts have arrived at NTPI for evaluation. The initial offerings will be evaluated by qualified experts from across the country. The topics include: Health Care Facility Decontamination Operations, Pre-CISD for WMD Incidents, Medical Operations for WMD Terrorism, WMD Incident Safety Officer, Decontamination for WMD, Operational Response, Operations Planning, Damage Assessment, Public Education for WMD, Evidence Detection and Sustained Operations for WMD Incidents.

## Course Delivery

Dr George Buck and Dr. Matthew Blais delivered an eight-hour block of instruction at Arkansas Technical University in Russellville, Arkansas on Monday, 29 June 1998, during the Emergency Administration and Management Symposium "Principle and Practices of Disaster Relief and Recovery". The block of instruction covered terrorism and safe emergency response to the consequences use of weapons of mass destruction. Approximately 60 persons participated as part of the live audience. In addition, the seminar was broadcast via satellite by Arkansas Educational Television Network and the downlinks reached a couple of thousand additional students. Viewers were able to call in toll-free and ask questions. The instruction was well received by the audience who asked several highly pertinent and penetrating

questions. A local newspaper covered the event and the article printed on this portion of the conference was highly complimentary to both speakers.

**Live Broadcast**

The National Terrorism Preparedness Institute (NTPI) hosted a live broadcast at the International Association of Fire Chief''s conference held in Louisville, Ky on September 15, 1998. The broadcast was titled ""Terrorism in American Cities."" The audience at the tele-conference in Ky. consisted of 1300 fire chiefs from around the nation and the world. This free two hour program was broadcast nationwide to public safety agencies and National Guard armories via satellite and the Internet. The signal was transmitted to NTPI, encoded and "streamed" live to the Internet via NTPI's website.
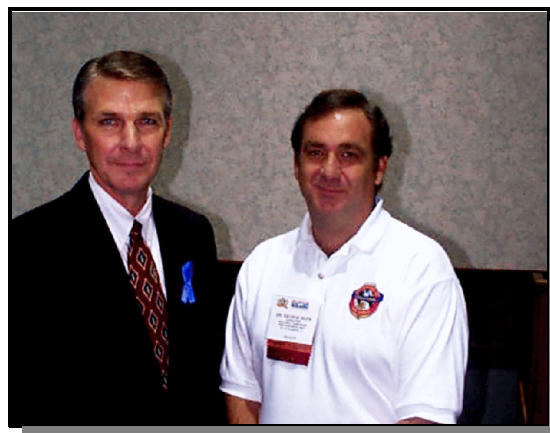
The first hour of the broadcast consisted of panelists'' remarks, focusing on three major topical areas: (1) Identifying training and response assets available to first responders; (2) Identifying the time line for consequence management resources; and (3) Preparing for special and high profile events. The second hour is reserved for a question and answer session during which questions may be submitted by the viewing audience via fax and Email. Invited panelists and their perspectives are:

> James Lee Witt, Director Federal Emergency Management Agency;

> David Lesak, moderator (national

perspective and hazardous materials'' assessment);

Garry Briese (Executive Director, IAFC; fire service resources, capabilities and availability);



James Lee Witt, Director FEMA with Dr. George Buck

> Ellis Stanley (City of Los Angeles Emergency Management; consequence management issues);

> Mario Trevino (Chief, Las Vegas Fire Department; multi-agency response to terrorist threats);

> John Eversol (Chief, Chicago Fire Department; large city response issues).

Data on downlink sites:

251 Sites across 47 states (Washington DC =1; Canada =1).
The estimated total live and videotape

audience is: 8688

91 Fire/EMS sites are participating with an audience estimated at: 4670 (54%)

28 Police Depts are participating with an audience estimated at: 1833 (21%)

84 MIL/FED sites are participating with an audience estimated at: 1735 (20%)

The actual site count is probably much higher as the program will be shown in at all 200+ Air Warrior sites, but not all of them registered with us.

The residual videotape effect will also be much larger than the total reflects as many FD/PDs have indicated that they will use the tape in training classes. Also, the Law Enforcement Education Television Network (LETN) and Fire Education Television Network (FETN) (participating with us for the first time) aired the programs live but will also rebroadcast it a number of times in the months ahead ...imagine what the totals might have been with proper time to



Speakers at the International Association of Fire Chief's Conference

market this program and a choice of a better time of day to broadcast it. The broadcast was re-broadcasted via satellite and the Internet at 11:00 am west coast time. This session has been archived on our website for future view by first responders around the nation.

**NTPI Distance Learning Program**

Over the past six months, NTPI has assembled the necessary means to administer distance learning courses to the nations first responders. This short chapter outlines the concepts, and the methods used to get NTPI ready for its task of training first responders on location as well as through teleconferencing, and the Internet.

On Location Training

NTPI's current development of fourteen courses will range in length from 1-3 days. Many first responders schedules do not allow them to attend a course any longer than this without disrupting their departments work schedules. Currently 120 high threat locations are identified where a terrorism incident involving a WMD is likely. Since mutual aid to first responders in these high threat areas is likely, NTPI's is focused though not limited on training the peripheral jurisdictions which may augment or supplant the affected jurisdictions resources. The market for NTPI is the full-time and volunteer first responder whose training is

accomplished on their day off, Saturday morning or evenings. These courses are designed to introduce the concepts of the subject matter and provide new and also reinforce current training they may have.

NTPI contacts or is contacted by an interested jurisdiction to offer courses. The course(s) are scheduled and the jurisdiction becomes the host. NTPI sends a Course Coordinator and Instructor from its staff to teach the course. Course materials are sent in electronic version or a master printed copy for the jurisdiction. The host is responsible only for printing adequate course materials for students. The students that attend the course are entered into NTPI's data base for follow-on training using either teleconferencing or via the Internet. A certificate is issued after course completion.
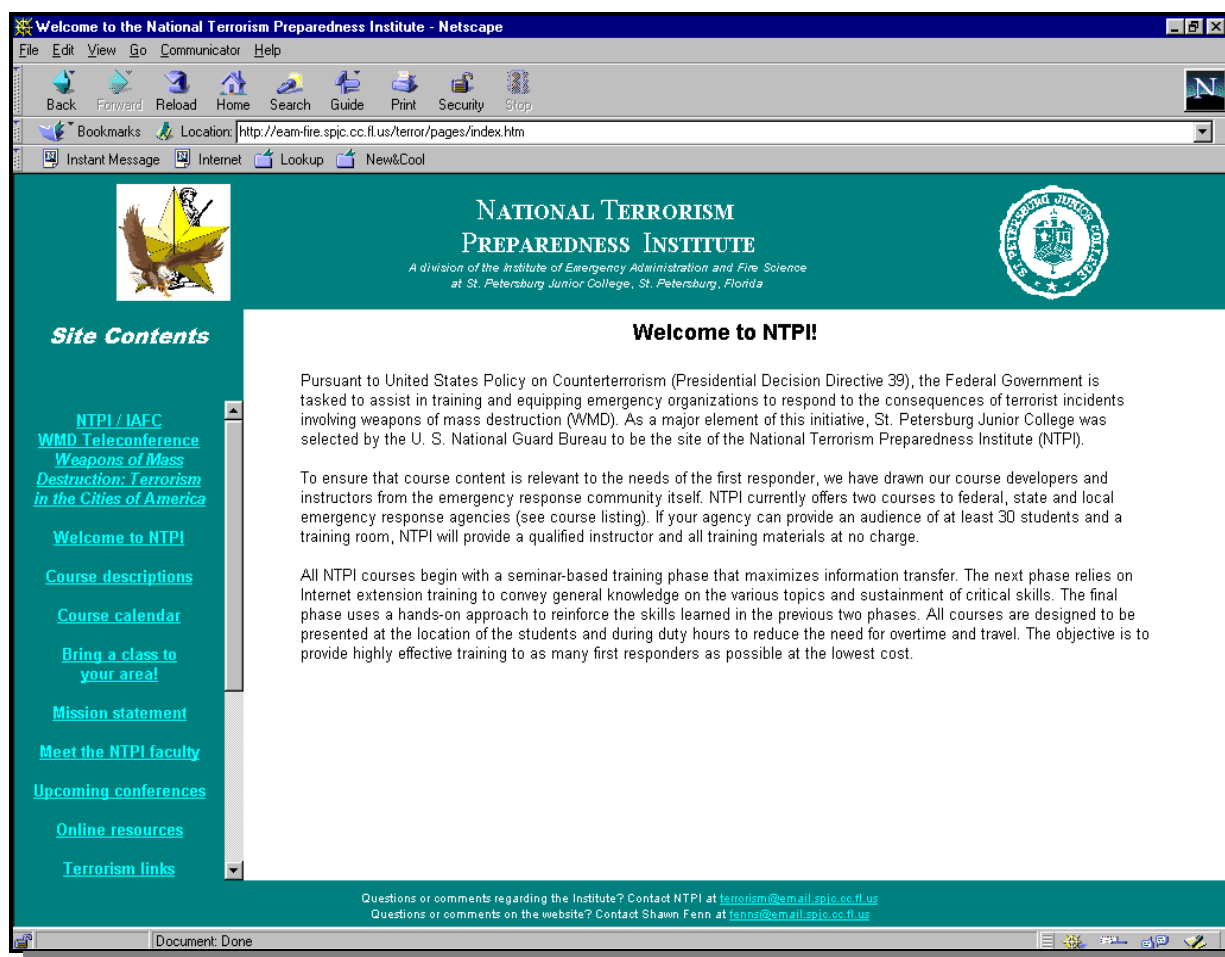
Follow-on Training Methods

NTPI is committed to delivering course materials via the Internet and instruction to the first responder where he/she is a fully equipped sophisticate or a novice computer user with a 28.8k modem.

*"If terrorists are trained via the Internet why can't we do the same for first responders"?*

Two methods are designed to administer follow-on training. The data base of students completing the initial courses are used to offer the follow-up training.

The National Guard is developing and

National Terrorism Preparedness Institute Website

implementing a teleconferencing system nationwide linking every National Guard facility. This system will allow NTPI to offer general and specific courses which build upon the initial on-location training. The education officer for each National Guard facility or their designated representative could act as the NTPI representative for testing and completing materials linked with the telecourse. Thus a first responder who is eligible for this teleconference training could proceed to the nearest National Guard facility on their day off or Saturday morning for additional training.

The second method of follow on training is via the Internet. NTPI has examined some technologies which offer low cost/high value methods to offer courses via distance learning. NTPI along with St. Petersburg Junior College Emergency Administration and Management have developed distance learning credit courses which offer the following benefits:

Has low initial cost to the Institute.

Adopted technologies which are portable.

Uses technologies which are less impacted by technological change.

Delivers course content using software likely to be used by student already.

Keeps the software learning curve minimal for both students and instructors.

NTPI has a dedicated server to support distance learning courses. The website is established and current staff administer the pages using standard Hyper-text Markup Language software packages. Some of this software is free via shareware. NTPI shares a T-1 line (capable of 1.5 megabytes per second). Plans are being developed for expanding this to 10 megabytes or more per second.

Since courses are offered virtually anywhere in the United States and territories, course materials must be portable. As available as the Internet is, limited bandwidth, or convenience may dictate that course material be available on CD-ROM or Zip Drives or in plain printed format. NTPI avoids specialized Internet based software which cannot support itself beyond the NTPI server.

Adobe's Acrobat and Real Network's Real Media.

Adobe Acrobat is a widely used software program which allows paper documents to appear on a computer screen or print while retaining the original format. The user needs software offered free from Adobe which is easily installed on the users computer. Most computers have this software already loaded. Course



materials may be scanned and published into the Acrobat format. This process, using the Acrobat software purchased from Adobe, is again simple and easy to use. This allows instructors, and course designers to publish course materials on their own.

Real Media is similar in concept to Acrobat. Real Media offers the student both video, slide show, and audio. The information is "streamed" to the student via the NTPI server. The student may see a slide show, movie or just listen to



the instructor on their home computer. The user downloads or may already have the free software needed to use this

method of distance learning. Real Media software for publishing is slightly more technical for instructors and course developers to use however it is envisioned that most editing and published in the medium will be done by the instructors and course developers.

## Conclusion

NTPI's first four months of operations have exceeded the milestones set. A framework of expansion has been laid to assimilate new staff members, adjunct instructors and market the program. NTPI has established a web presence, conducted a tele-course in conjunction with the International Association of Fire Chief's conference, developed 14 courses, conducted on-locations courses in three locations. These exciting milestones are opening new opportunities for the coming year of operations.

# Section II  The VISION

**FY99 Course Projection**

NTPI will concentrate on four major areas in FY99.  We will continue to offer the two courses presented in FY98 (WMD001*: Decontamination for Weapons of Mass Destruction, A Manager's Overview* and WMD002: *Emergency Response to Terrorism, Basic Concepts*). These courses will contribute to the majority of the offerings in the first quarter.  We will also present the initial deliveries of the ten new courses developed as part of the FY98 budget. The objective will be to validate these courses and train the adjunct instructors in the first quarter and start general offerings starting in the second quarter. In addition, we plan on putting all of the extension training materials for our courses on the Internet to increase our student contact numbers.  The last area major of activity will be the development of two new courses per quarter starting in the second quarter of FY99.

WMD001 is currently scheduled for two offerings in the first quarter, one class at the University of Massachusetts and the other at the Connecticut Fire Academy in December.  Additionally, we will tentatively offer two classes in Ft. Collins and Cotapaxi, Colorado in November.    WMD002 is currently scheduled for four offerings in October for the Orange County Sheriff's Office in

Orlando, Florida.    Additionally, this course will be offered to the Collier County Sheriff's Office in December.

The ten new courses developed under last year's budget will be scheduled as the curricula become available.  We have tasked the course developers to obtain a course date, audience and classroom and to present the material as part of the development contract. WMD004 (Pre Critical Incident Stress Debriefing for WMD Incidents) is tentatively scheduled for initial delivery during the second week of November. All of the other courses are still under negotiation for the first delivery.

The course validation process will serve two purposes: vetting the curriculum and providing a pool of potential adjunct instructors. We plan on having a minimum of four qualified subject matter experts evaluate each course.   They will submit a written evaluation of the course's applicability, accuracy and presentation quality, which will be used to make the appropriate changes to the curriculum.  We will then use these subject matter experts as an initial pool of adjunct instructors.

Internet    training    extension materials will be offered for all of our courses on a limited access basis. Participants will be required to register on

line (so that we can verify need to know), obtain a password and complete course activities prior to obtaining a certificate of completion for each course. We are currently setting up our web site to allow for password access for Internet extension training. This should be completed by the end of the first quarter FY99.

NTPI will have three course coordinators on staff for the first quarter and plan to hire two additional coordinators during this time period (the new coordinators will not be effectively in their jobs until the second quarter of FY99). Our target is to have each coordinator establish an average of two courses per week. We expect to see a dramatic increase in course offerings starting in the second quarter due to increased awareness of our organization, the buildup of coordinators and growth of the pool of adjunct instructors. Our marketing efforts have concentrated on sending letters to all of the state's emergency management agencies, using personal contacts and networking at major conferences and conventions.

Our Current projection for the first quarter of FY99 is to offer a total of 34 courses with 1700 students. The coordinators currently on staff are handling curriculum design, course coordination, course deliveries and special projects. New coordinators will not have these additional duties, so they will have greater time to dedicate to the scheduling of classes. Projections for the second through fourth quarters of FY99

include the new coordinators at three classes per week. Our goal is to conduct 384 classes in the remaining three-quarters of FY99 for a total direct contact of 11,520 students. Our student totals will increase as a result of Internet extension training, video conferencing and special events, which are set up as additional duties.

Future course development will be done based on needs identified from student feedback. We are planning on two topics per quarter starting in the second quarter of FY99. The topics have already been identified as *The HAZMAT-EOD Crossover for WMD Terrorism* and *The Role of the Public Information Officer in WMD Incidents*. We will let contracts on these two courses in the beginning of the quarter with the target for the initial offering set as the beginning of the next quarter.

## Weapons of Mass Destruction

FY '99 Consequence Management Productions

The NTPI schedule for FY '99 includes four satellite broadcasts and one documentary. The broadcasts will be approximately two hours in length and provide topic-specific training to first responders nationwide. Teamwork and hands-on training at downlink sites are planned to compliment each broadcast. Internet networking and written follow-up will reinforce coursework and provide students with a valuable database of global information and contacts. Post-

show content assessment will be conducted with future broadcasts modified accordingly.

As Dr. Buck is considered a global authority on the issues of WMD and Terrorism Preparedness, this office will see an increase in requests from the national and international press. Positive positioning of the NTPI, Dr. Buck and SPJC/National Guard will be ongoing.

**BROADCAST #1** "*Transferring the European Approach to Terrorism into a U.S. Model*"

A panel of experts from Northern Ireland, London, Israel and Africa will discuss the
creation of a US model for consequence management. Pre-produced roll-ins will provide detailed examination of two successful programs. Two-way audio, fax and e-
mail will enable viewers to interact with our distinguished panel.

**BROADCAST #2** "*Weapons of Mass Destruction: Terrorism in the Cities of America*"

Follow-up to the highly successful 15 September 1998 broadcast in Louisville, Kentucky. The program will keynote the International Association of Fire Chiefs annual convention in Kansas City. Pre-produced roll-ins will highlight successful national programs, and the satellite audience will interact with the panel as described above.

**BROADCAST #3** *proposed joint project with the Bureau of Justice and the Office of Domestic Preparedness*

**BROADCAST #4** "Multi-Agency Response to Terrorist Threats"

It is proposed that Chief Mario Treveno of the Las Vegas Fire Department will lead a panel discussion on this issue. Supporting videotape will be produced, and the national audience will interact with the panel as stated above.

**DOCUMENTARY** *"The Cold Zone: First Responders Deal with Weapons of Mass Destruction"*

This fifteen-minute videotape details specific warning signs of terrorist incidents.
*Chemical*, *Explosive*, and *Crime Scene/Terrorism Incident* scenarios are included and
incident escalation techniques are stressed. Footage from actual events combined with
personal interviews will prepare first responders for successful terrorist scene control.
Thirty-five to fifty thousand copies of "The Cold Zone" (wt) will be produced by BJA and distributed to first responders nationwide.

## Mobile Emergency Operations Center (MEOC) Trainer

Phase One

Phase One of the MEOC consists requisitioning equipment for workstations and building the infrastructure to support MEOC communications and data processing. Phase One and declaration of Initial Operational Capability (IOC) is scheduled for <u>31 January 99</u>. To demonstrate IOC, a typical workstation is assembled with a communications link both via VHF radio and the portable PBX telephone system. VHF radios are frequency programable nationally where NTPI can actually integrate them into a hosts radio system. For example the Red, White and Blue Mutual Aid frequencies for the Florida Fire Chief's Association. At the IOC, the MEOC is capable of conducting limited training operations. Most internal messaging and communications is manual using ICS forms. Some computer capabilities will enhance the operations by providing mapping, emergency management software programs and word processing. The emergency management specific software program used is EM2000 which is used in the State Division of Emergency Management Emergency Operations Center.

Initial training on the MEOC consists of building a cadre of highly qualified first responders to test and evaluate the MEOC capabilities. This training session consists of deploying the MEOC to a field location, setting up ICS workstations and conducting a mock disaster simulation. Two one week courses are planned for this evaluation as well documenting training concepts for future incorporation into planned courses. This is a NTPI and State Division of Emergency Management operation.

Phase Two

Phase Two of the MEOC is scheduled for completion on 1 June 99. This will bring the MEOC to Full Operational Capability (FOC). This phase consists of further building of MEOC computer capabilities by integrating a portable Information Systems network linking every workstation. Every workstation will have computing and communication capabilities which include email, intra and Internet access. Every workstation will be able to assimilate, print, fax or email information on demand. FOC requires that the MEOC be fully land and air transportable. The packaging containers to protect and facilitate transport will be in-place to fully enable rapid transport.

Phase Three

Phase Three of the MEOC is the maintenance phase. As equipment is attrited and upgrades are needed a full-time operations officer is planned to maintain the MEOC capability. After 1 June 99 the MEOC will be integrated fully into the planned course offerings. Emergency Management specific and data bases required for MEOC operations are maintained in a "ready" status. Documents for MEOC stand-up, stand-

down, transport, and operations will be complete by the end of 1 Oct 99.

Courses Associated with the MEOC

Three levels of courses are anticipated for MEOC operations. These are supplemental and separate from the current WMD series courses.

MEOC 001 Initial MEOC Training

This is familiarization with MEOC concepts and capabilities. The MEOC may be used for this training or substitute hands-on training with the use of extensive graphics to depict MEOC operations. Approximately six classes are planned for the second through fourth quarter of FY 1999. This is a 4 hour course.

MEOC 002 ICS/ESF Training

This is actual hands on training with MEOC workstation equipment with an simulated disaster scenario. This qualifies a first responder to work in the MEOC either to train students or conduct exercises. Approximately six classes are planned for the second through fourth quarter of FY 1999. This is an eight hour course.

MEOC 003 Command and Control Training

This is a limited course for advanced first responders who could lead and manage a MEOC. This is a hands on course which trains first responders advanced

concepts in integrating MEOC operations into the Integrated Emergency Management System. Approximately four classes are planned for the second through fourth quarter of FY 1999. This is an 8 hour course.

MEOC Administration

The primary mission of MEOC is to support hands on training for first responders. This is primarily the third phase of training for first responders. As the data base of course completions grows (approximately 10%) the utilization of the MEOC is anticipated to grow rapidly after 1 June 1999. NTPI staff will maintain this data base.

Staffing for the MEOC is at least one full-time and six qualified first responders who will accompany the MEOC on location. Workstation staffing and the command staff is filled by local first responders who have completed the qualification training.

**New Technology**

The NTPI website is established on the new Dell server. This server is highly capable and will not need further hardware upgrades for at least one year. Software and website maintenance will require contract work to improve the security and added features of the current website. Some enhancements that are anticipated include, guest book, on-line registration, database compilation, security authorizations, etc.

As technology changes NTPI anticipates upgrading its capabilities to meet the change and demand. Some forecasted changes are upgrading software. NTPI uses Real Networks Real Publisher and Real Server to "stream" live and archived video and audio to students. These students are primarily in their second phase of training conducted via the Internet. NTPI is currently licensed for up to 100 streams. As course expansion continues, we may need to buy an upgrade block to 200 streams or more.

 NTPI also anticipate a fuller integration of the Adobe Acrobat software. As curriculum designers turn out courses, these materials will be published in Acrobat. NTPI used Adobe Acrobat and Capture software. These may be upgraded in the coming FY99 to incorporate new changes. NTPI is adamant about keeping technology costs low as well as ease of use of software. These technologies insure that.

Hardware upgrades are planned to increase the "bandwidth" capabilities from the current 300 KB to at least 5 MB by December 1999. This added bandwidth supports the Real Media "streaming" courses planned in phase two. Real Media will require a dedicated "streaming" server as well as encoding/editing computer workstation. This hardware will cost approximately $40,000. As Internet courses are added this additional hardware will be needed to support the development of course materials.

Comments concerning this report:
National Terrorism Preparedness Institute
SPJC Allstate Center
P.O. Box 13489
St. Petersburg, FL 33733-3489
(727) 341-4556
or visit our website at:
http://terrorism..spjc.cc.fl.us